



# ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector

Vol. 8 No. 7

July 2005

## ● Electrical Compliance Officers Needed

Three new electrical compliance positions have been created. The department is looking for qualified individuals to fill those positions. They were added to the Governor's budget as part of an anti-fraud package on the heels of a very successful Electrical Program sponsored pilot called SAFES (Strategic Action for Electrical Safety). The SAFES compliance pilot project started in April of 2004 and lasted approximately six months. During this time the four member team issued many electrical citations in an attempt to combat the underground economy and level the competitive playing field.

The positions will have the equivalence of a Construction Electrical Inspector Lead and will be located in Vancouver, Tukwila and Spokane. Applicants must show a strong desire to enforce the laws and rules of the State of Washington as they pertain to the electrical industry.

Instructions on how to apply for these positions, including the minimum qualifications to apply, will be sent out on the Electrical Listserve and posted on the Electrical Program website this month. The Electrical Program plans to have these positions filled by September. In addition there will be a general recruitment announcement at the same time for electrical inspectors. Due to the new bargaining agreements effective July 1, 2005, applying for an electrical inspector positions has changed significantly. To join the Electrical Listserve follow the instructions at the link below.

<http://www.lni.wa.gov/Main/Listservs/Electrical.asp>

## ● Hazardous Conditions on the Inspection Site

The permit holder must make the electrical inspector aware of any potential physical or health hazards prior to the inspection being performed. Recently an electrical inspection was requested at a jobsite and when the inspector entered the building he was met by an individual wearing a contamination suit and respirator while removing asbestos in the home. The outside of the jobsite was not marked as to the hazard and the inspector was not made aware by the electrical contractor at the time of the request.

The permit holder must have all hazard(s) clearly marked or make the inspector or supervisor aware of the hazard prior to the inspection. Hazards may include: dangerous chemicals stored in the area to be inspected, structural damage to the building, loose pets, etc.

## ● New WAC Rules Available Online

The current adopted Washington Administrative Code, WAC 296-46B, went into effect June 30, 2005 and is available in Adobe Acrobat .PDF format at the website below. The current Revised Code of Washington, RCW 19.28, is also available at the website. Due to cost cutting measures in government copies of the rules will not be sent out as in previous years. Paper copies will be available at the local offices as soon as our print order is processed. A fee of \$5 per copy will be charged.

<http://www.lni.wa.gov/TradesLicensing/Rules/ByTrade/Electrical/>

## ● Effective Date of the 2005 National Electrical Code—June 30, 2005

The revisions to WAC 296-46B that were started last September became effective June 30, 2005. The 2005 version of the National Electrical Code (NEC) is formally adopted in Washington by these rules. Electrical permits purchased after the WAC effective date will be inspected under the 2005 NEC. Plan review projects received and **accepted for review** after the effective date will be under the 2005 NEC. Permits purchased prior to July 1, 2005 may conform to either the 2002 NEC or 2005 NEC, but **not** a combination of the two standards

## ● Electrical Certification Exams and the 2005 National Electrical Code

When a new version of the NEC is adopted, we always receive a large number of queries from experienced trainees and other exam candidates anxious about when the exams will be updated to the new Code. Electrical examinations will be updated and based on the 2005 NEC later this summer or

early fall. Very few questions will be affected by the change in code versions. Our exam questions are based on basic safety, Code, and theory fundamentals that rarely change with a new NEC edition. When the exam revision date is set it will be announced in this newsletter and on the *Washington State Electrical Program Updates* (Electrical Listserv) automatic E-mail system. All electrical contractors, administrators, electricians, and other industry stakeholders should subscribe to this service at:

<http://www.lni.wa.gov/Main/Listservs/Electrical.asp>

### ● Optional Standby Systems—Manual Transfer Switch Installation Requirements

As computers become more integrated into our daily working and home lives, individuals are finding it desirable to install small back-up power systems. The typical and most affordable system is a small, portable generator used with a 4-10 circuit Manual Transfer Switch. Installed properly, this system can operate safely and not cause hazardous failures like: simultaneous connection of power sources, back-feed of dangerous voltages onto utility conductors, or conductor and generator overloading. Back-feed and simultaneous connection safeguards are inherent in properly listed Manual Transfer Switch products.

Overloading becomes a possibility when the installer determines the circuits to wire to the transfer switch, or the end-user determines which circuits are switched to generator power and operated at the same time. Manufacturer's instructions like: *"Determine which circuits will be used during an emergency. If a selected circuit is part of a multi-wire branch circuit, ensure the other branch circuit that shares the neutral is also connected to the transfer switch. The two circuits must be connected to opposing legs (phases) of the generator power and a handle tie must be installed on the switch handles so that both legs are transferred at the same time."* must be followed. The operating loads must be balanced on each "phase" of the generator output. Manufacturers typically provide appliance running and starting load tables or install watt meters to ensure this is done. Use appropriate equipment for these installations.

### ● Identification of Listed Swimming Pool Pumps

WAC 296-46B-680 requires that all field installed pool pumps be listed as a "swimming pool pump" or a "swimming pool/spa pump." Additionally field installed pool heaters must meet the listing requirement as a "swimming pool heater" or "spa heater."

As installers and regulators we could assume very easily that the label would be required to be located on the motor of the pump. The listing requirement for the pool pump is **as an assembly**. The label, verifying the listing, may be located anywhere on the pump assembly.

### ● Preview 2005 NEC Code Changes – 240.21(B) and 240.21(C) New Limits For Sizing Feeder Tap Conductors And Transformer Secondary Conductors

Changes to NEC 240.21(B) and (C) contain new language making it clear that designers and installers are not allowed to apply the "round-up" rule in NEC 240.21(B) to tap conductors or transformer secondary conductors when the conductor ampacity does not match the rating of the circuit overcurrent protection device. The ampacity of the tap or transformer secondary conductors must not be less than the rating of the overcurrent protection.

### ● Electrical Question of the Month

**This Month's Question:** A raceway is installed through an area with an ambient temperature of 46 degrees Celsius. The raceway contains the following circuits, nine current carrying conductors and an equipment grounding conductor. The conductors are all #10 THW copper. What is the allowable ampacity for these conductors?

**A)** 13.1 amps, **B)** 17.5 amps, **C)** 18.4 amps, **D)** 24.5 amps

**Last Month's Question:** Electricity cost 13 cents per kilowatt hour. Ten metal halide high bay lights draw 2 amps each at 240 volts for 12 hours a day 5 days a week. How much will these lights cost in a four week period?

**A)** \$419, **B)** \$150, **C)** \$105, **D)** \$210

[The answer is B. (10 luminaires X 2 amps X 240 volts) /1000 = 4.8 KW; (5 days/week X 4 weeks X 12 hours/day) = 240 hours; (4.8 KW X 240 hours) = 1152 KWH; (1152 KWH X .13 \$/KWH) = \$149.76].